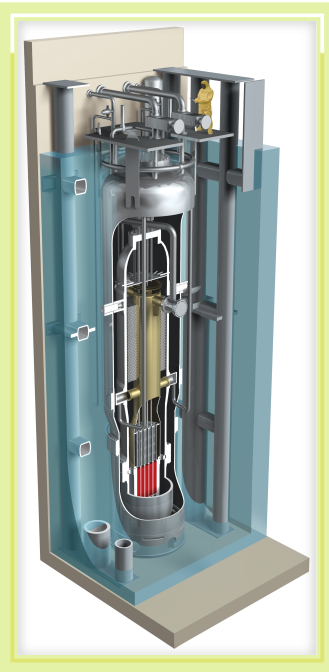


The Future of Nuclear Energy

NuScale Power
Safe. Clean. Economic. Simple
Small Modular Reactors



Utah Governor's Energy Summit
Salt Lake City, UT 1/10/13

Mike McGough

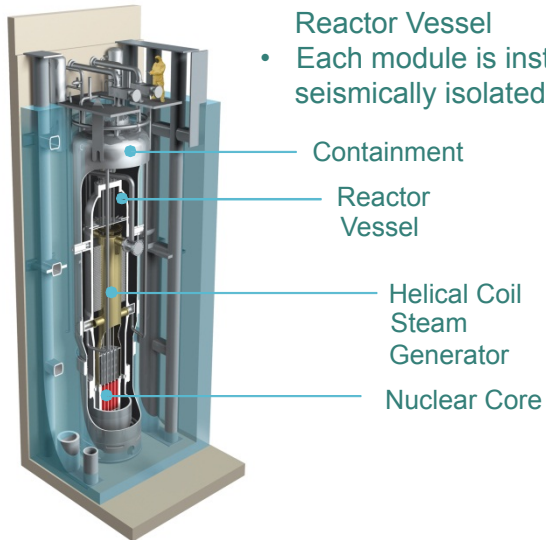


© NuScale Power, LLC 2012

What is a NuScale Small Modular Reactor?

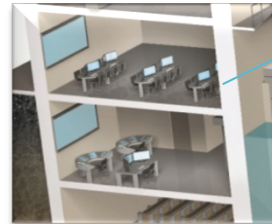
45 Mwe (160MWt) per reactor

- Module includes Containment and Reactor Vessel
- Each module is installed in its own seismically isolated bay



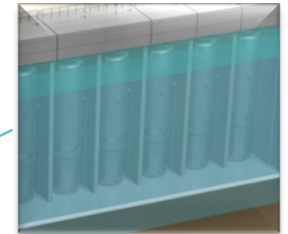
Module Reactor Building

Below Ground Control Room

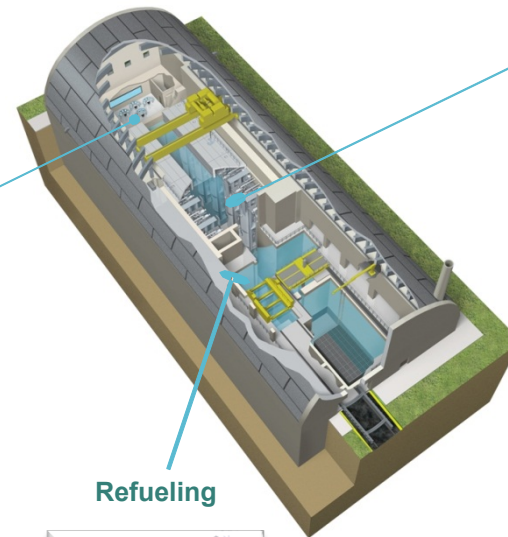


- provides enhanced security and state-of-the-art controls

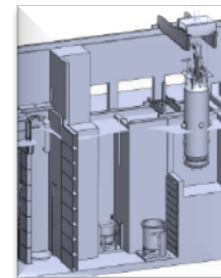
Below Grade, Common Pool



- Installed in groups of up to 12 modules
- 540MWe/1920MWt maximum plant size
- Practical minimum 2-4 modules



Refueling



- Each module is refueled underwater while the remainder of the plant produces power
- Refueled once every 24 months
- 5 day refueling target

Shipping

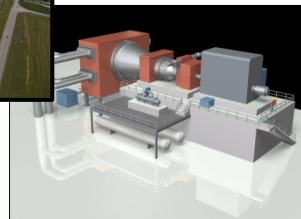


- 3-year construction cycle
- Factory-Built
- Truck, Rail or Barge shippable

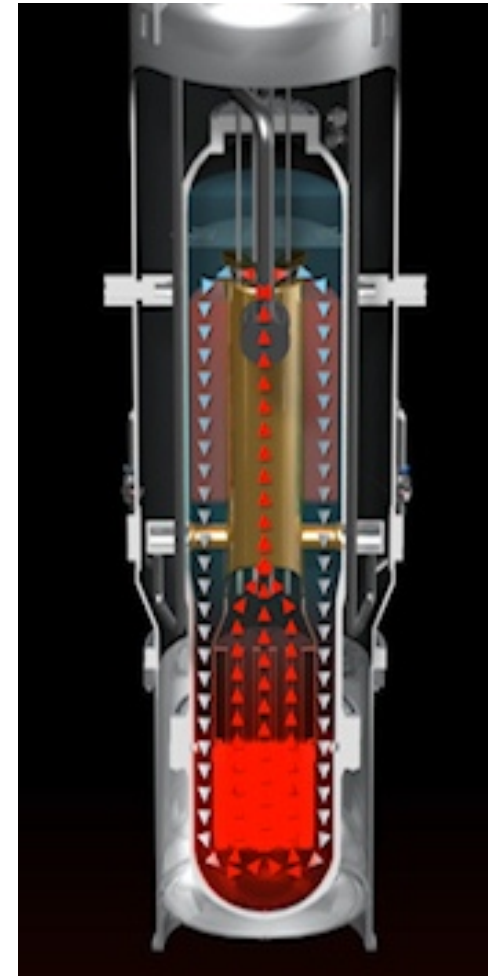
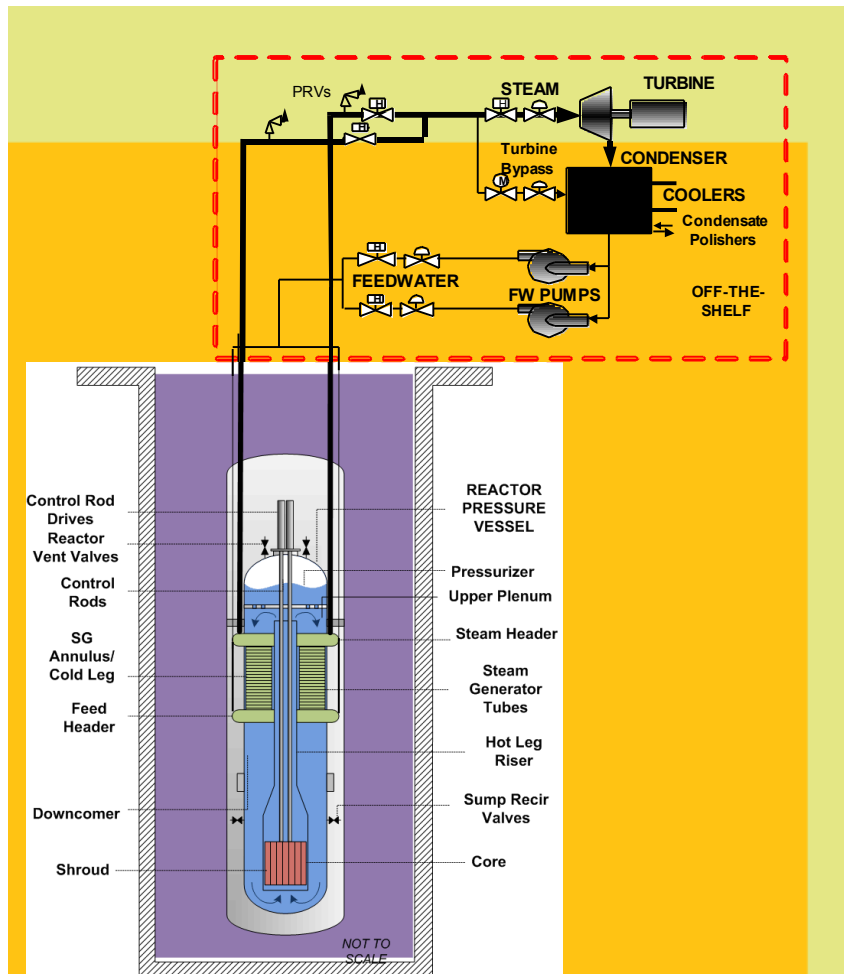
Manufacturing



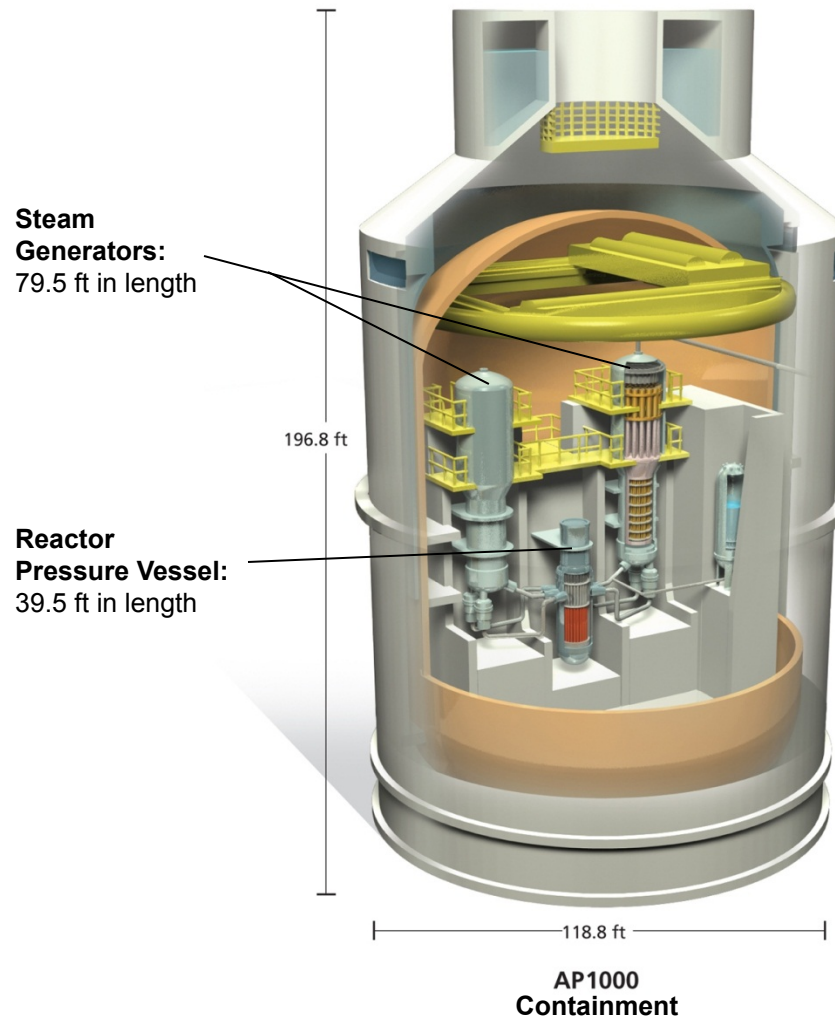
Skid-Mounted Steam Turbine/Generator



Elegantly Simple Innovative Design [\(VIDEO\)](#)



Size Comparison (vs. AP1000)



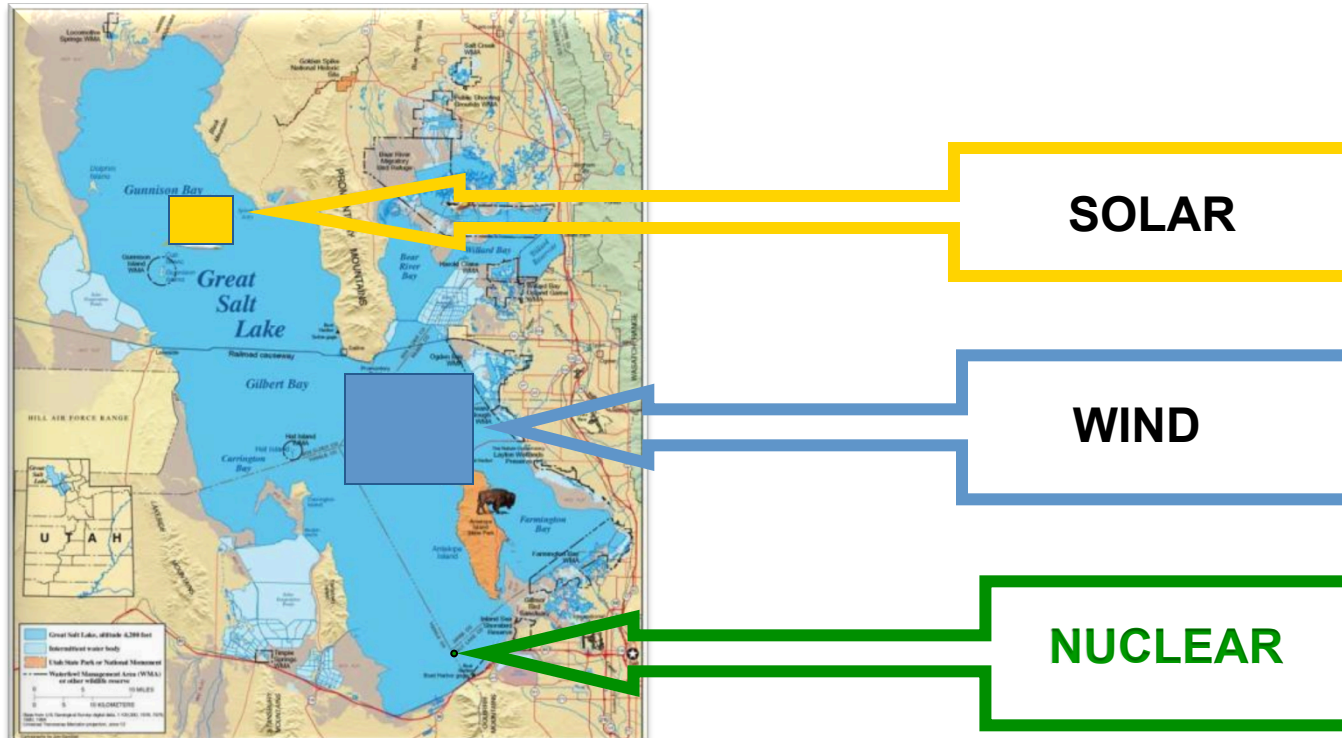
**NuScale's combined
containment vessel
and reactor system**



Comparative Land Use Requirements

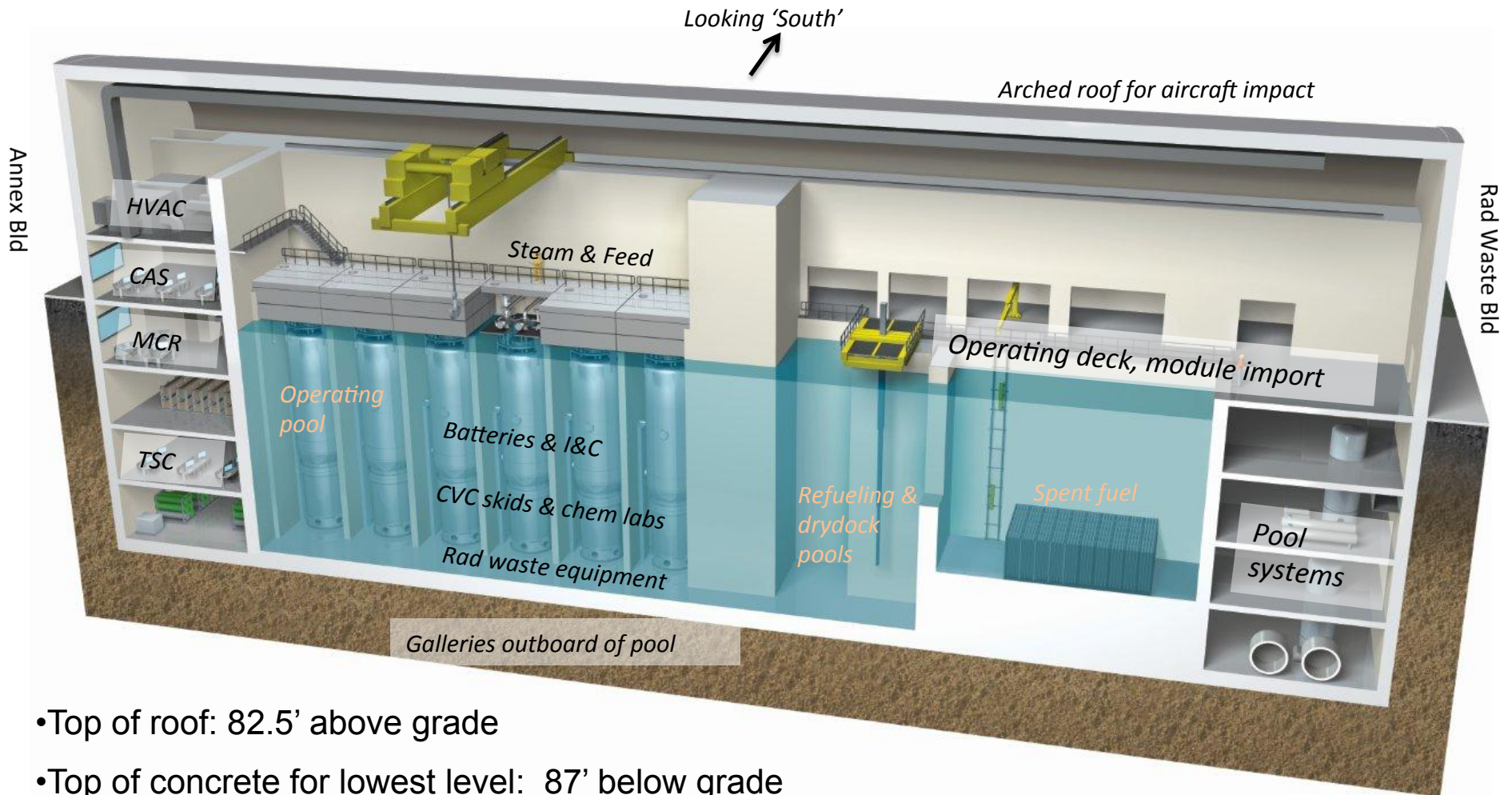
A 540 MW **nuclear** plant requires ~ .07 square mile of land to produce equivalent amount of energy from wind or solar requires:

- a 127 square mile wind farm
- a 27 square mile solar array



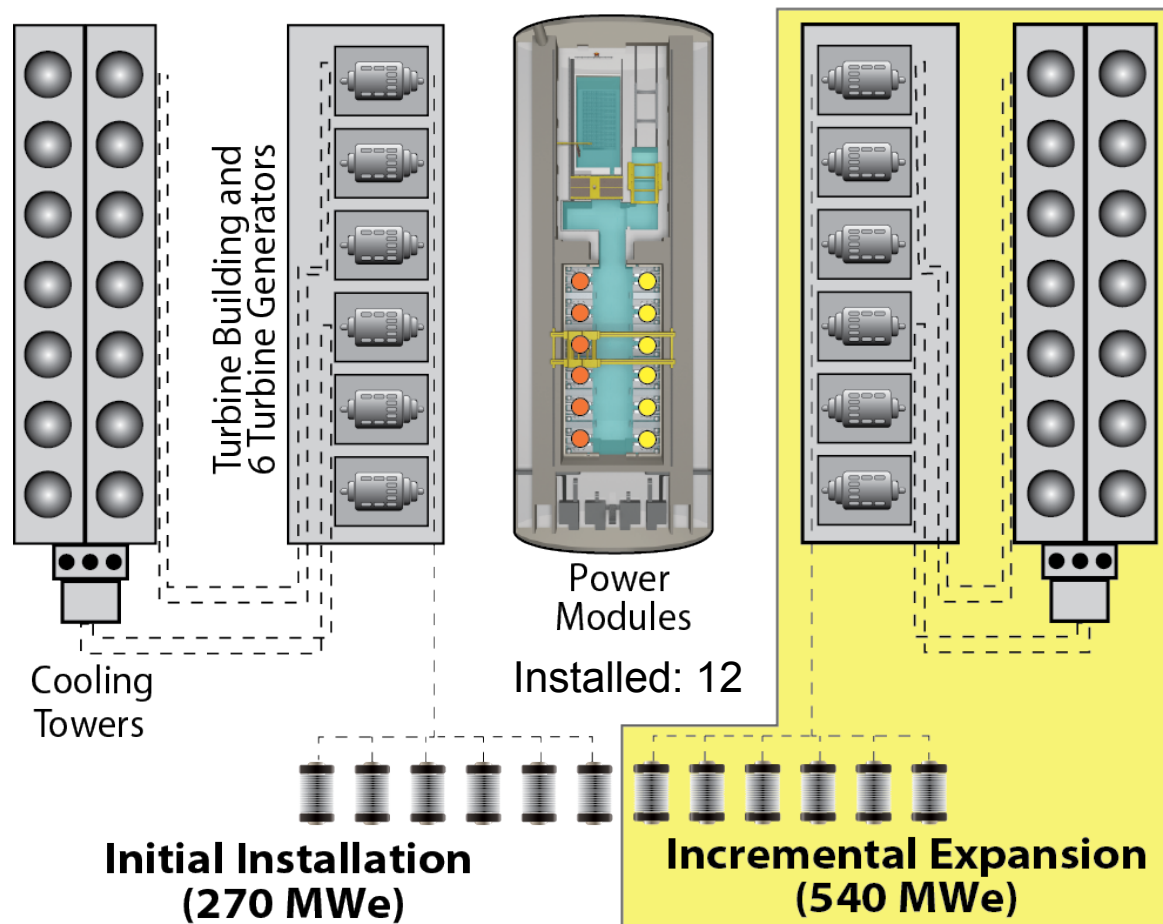
*Sources: Establishing benchmarks for environmental comparisons by Roger H. Bezdek and Robert M. Wendling; Energy Sprawl or Energy Efficiency: U.S. Climate Policy Impacts on Natural Habitat by Robert I. McDonald, Joseph Fargione, Joe Kiesecker, William M. Miller and Jimmie Powell; Generation Technology Comparison by CPS Energy

Reactor Building Section



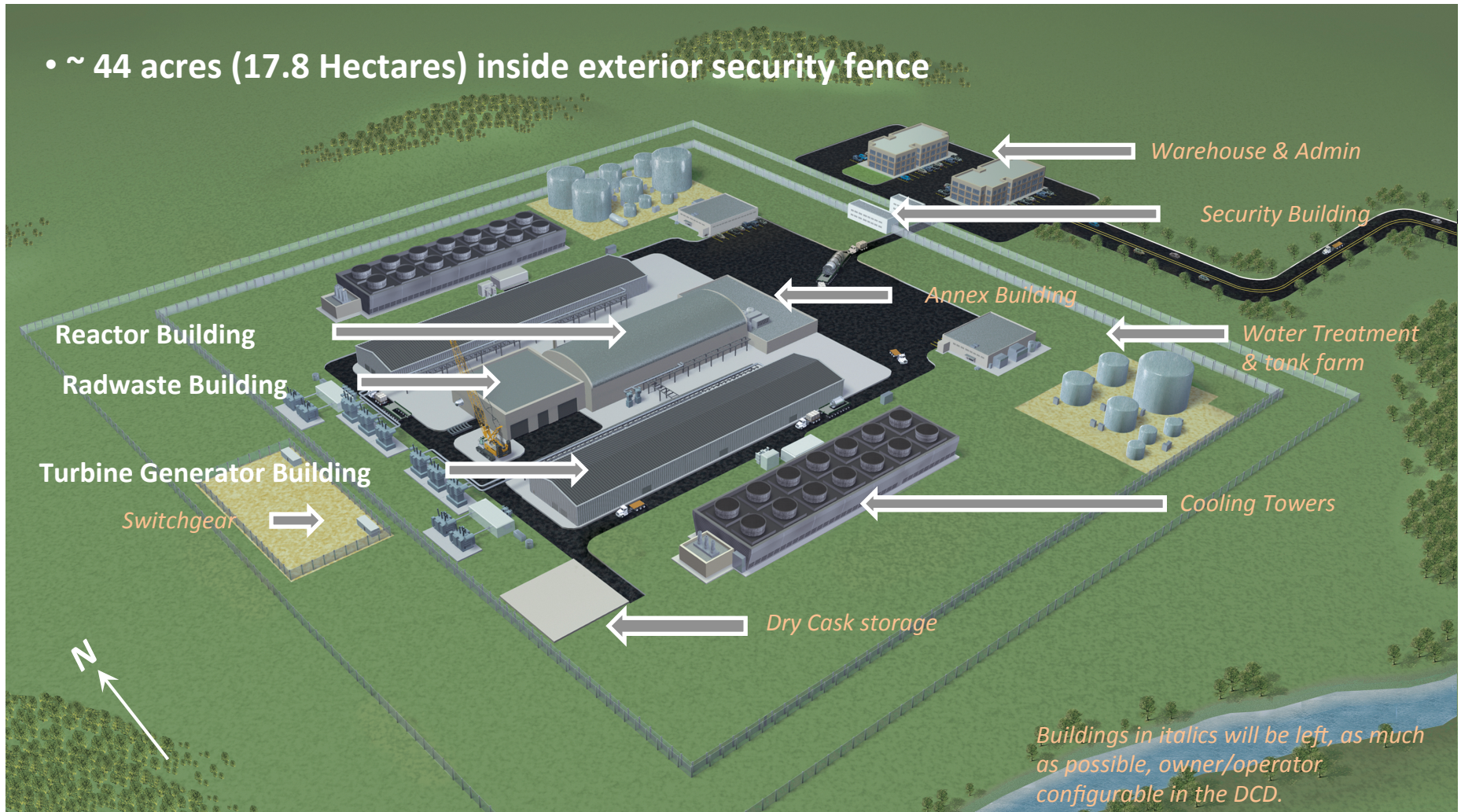
- Top of roof: 82.5' above grade
- Top of concrete for lowest level: 87' below grade
- 443' E-W , 137.5' N-S

Incremental Build Out

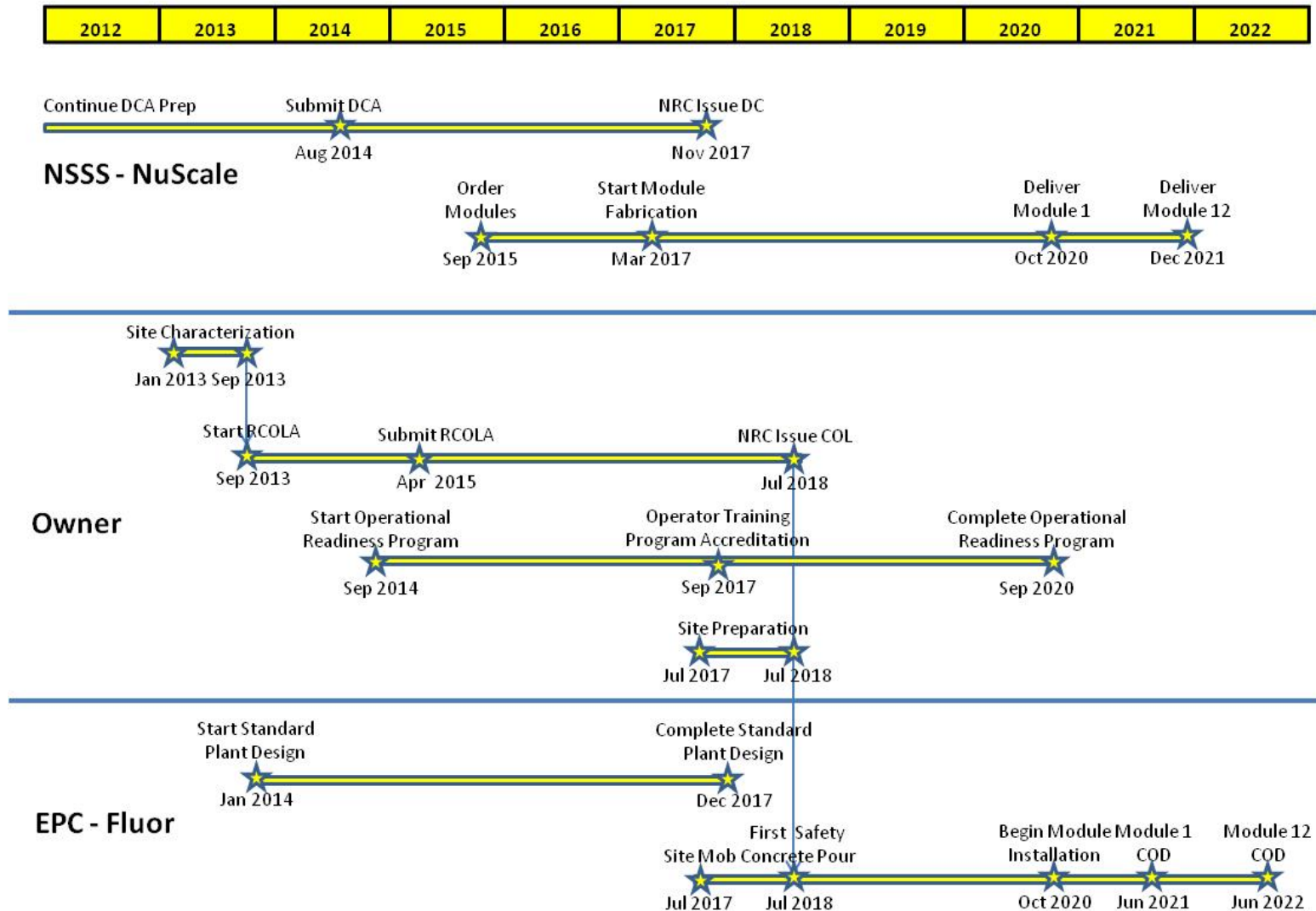


Site Layout

- ~ 44 acres (17.8 Hectares) inside exterior security fence



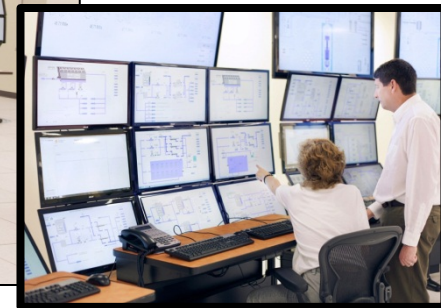
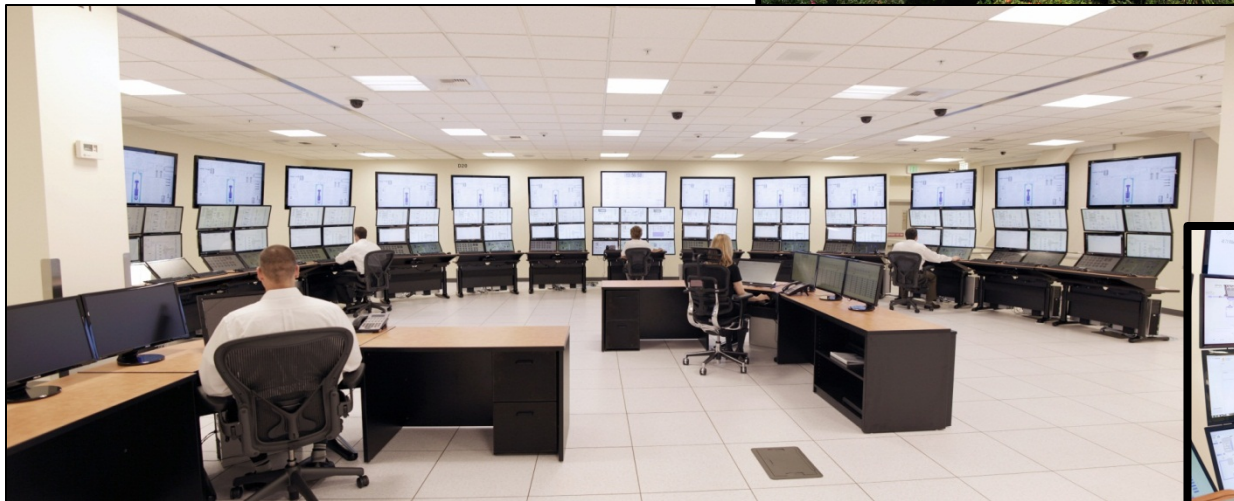
Sample Schedule – Overall Timeline



Where we Stand Today

- NuScale development underway since 2000
- 1/3-scale prototype in testing since 2003
- 12-module control-room simulator May 2012
- Detailed design underway
- Design certification docs in prep
- Potential initial site and interest investigations underway in 20 states and 12 countries

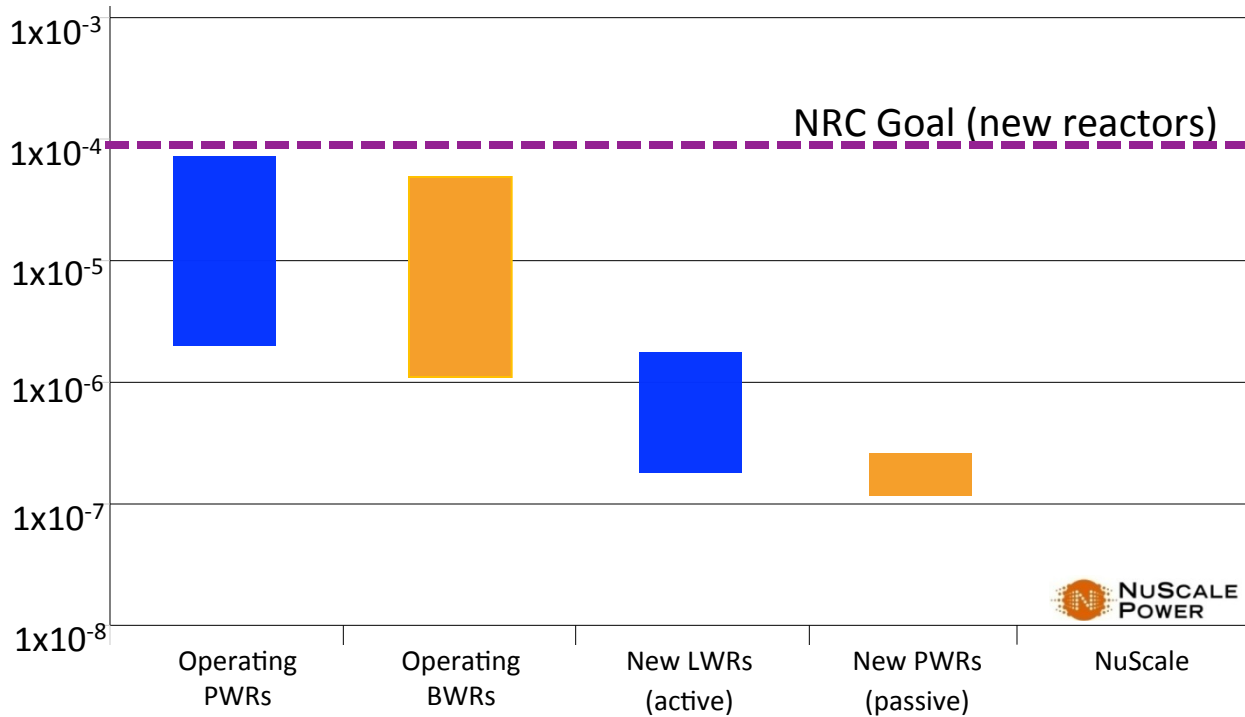
NuScale Laser-Focus



The NuScale Safety Case

- NuScale is specifically designed for safety in a Fukushima-like event
- Stable long-term cooling without pumps or motors
- Common pool ultimate heat sink
- Pool provides Seismic Dampening and Radiation Shielding
- Station blackout
- Large Break LOCA (Loss Of Coolant Accident)
- Underground Installation

Core damage frequency significantly reduced



Source: NRC White Paper, D. Dube; basis for discussion at 2/18/09 public meeting –on implementation of risk matrices for new nuclear reactors

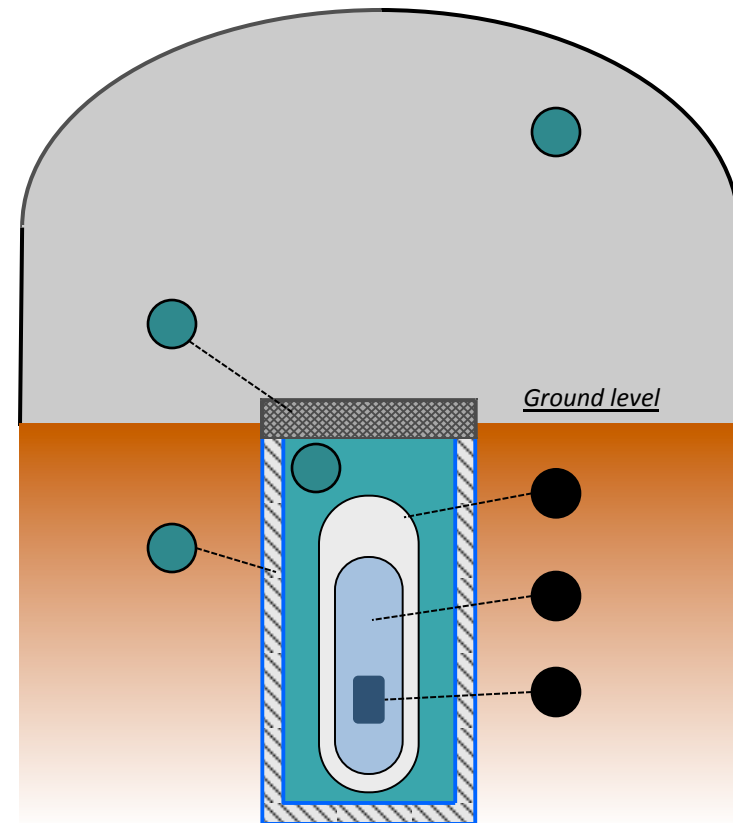
Added Barriers Between Fuel and Environment

Conventional Designs

1. Fuel Pellet and Cladding
2. Reactor Vessel
3. Containment

NuScale's Additional Barriers

4. Water in Reactor Pool (4 million gallons)
5. Stainless Steel Lined Concrete Reactor Pool
6. Biological Shield Covers Each Reactor
7. Reactor Building



NuScale Project Risk Reduction

- 3-year construction cycle—reduced interest costs
- Plant components 100% US-built
- Improved quality, repeatability and schedule certainty of shop manufacturing
- Initial units on-line early, generating revenue
- Can “ease into” a project and build as needs grow, don’t get stuck with excess generation
- Smaller incremental MW additions easier to digest in generation systems
- 12-each 45 MW units reduce single-shaft failure risks
- US-built equipment establishes exportable product line

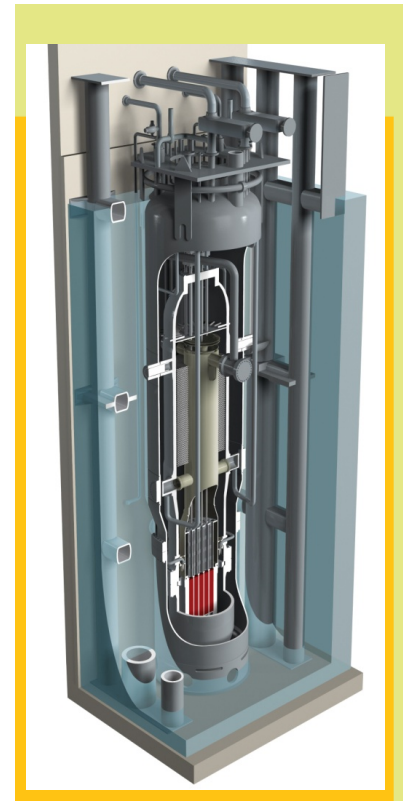


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